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or Friendship Connections?**

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**Keywords: Political Majority, Prediction Markets, Firms Value, Abnormal  
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# Impacts of Political Majorities on French Firms: Electoral Promises or Friendship Connections?\*

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## Abstract

This paper analyzes the impact of changes in the winning chances of candidates running for the 2007 French presidential election on abnormal stock returns of firms that could benefit from a candidate's victory. We use prices formed by transactions on a political prediction market to reveal the probabilities of victory of S. Royal and N. Sarkozy. We find that changes in S. Royal's probability of victory have no impact on firms that should benefit from her party platform. On the opposite, abnormal returns of firms that should benefit from reforms announced by N. Sarkozy or that are directed or owned by his friends are positively correlated with changes in his probability of victory. Both effects appear to be independent and the network effect is fifty percents larger than the other one. All these results persist when we take into account specific characteristics of firms.

**KEYWORDS:** Political majority, prediction markets, firms value, abnormal returns, social network, political connections.

**JEL Codes:** C58, D72, D84, H50, G14.

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# 1 Introduction

Political majorities have an impact on global economic activity. This effect is driven by ideology or by the nature of the competition to access the power (see Alesina and Rosenthal (1995) and Alesina et al. (1997) for seminal surveys of this issue). At a micro-level, political majorities can impact the value of firms, either through their political orientations or friendship connections of individuals in office. In this paper, we analyze returns of firms listed on the French stock market induced by anticipated changes in the political majority during the 2007 French presidential election.

To achieve this, we compare the effect of changes in the different candidates' probability of victory on the value of firms. We use prices from a prediction market to assess changes in each candidate's probability of victory. We correlate abnormal returns of stocks of firms belonging to different groups to these changes. Firms that should benefit of S. Royal's platform do not exhibit high abnormal returns. On the opposite, firms that should benefit from reforms announced by N. Sarkozy or whose top executives or main shareholders are friends of him exhibit significantly positive abnormal returns. The effect of the raise of N. Sarkozy on the latter group is stronger than the effect on the first group.

All in all, results presented in this paper uncover the value attached to the political platforms of candidates and to the friendship connections of N. Sarkozy. Other papers show that friendship connections are priced by the market. Fisman (2001) shows that Indonesian firms linked with Suharto have seen their value decreasing with Suharto's health problems. Do et al. (2011) show that US firms whose top executives are connected to politicians running for the Congress exhibit positive abnormal returns if the politician wins. Khwaja and Mian (2005) present the advantage of politically connected firms to have access to the financial market in Pakistan. Claessens et al. (2008) study political connections and preferential access to finance. Fan et al. (2007) and Li et al. (2008) estimate the value of political connections in China. Goldman et al. (2009) determines the impact of politically connected boards on firms value in the United States.

Prediction markets offer an interesting source of data concerning political expectations as shown by Knight (2007) and Snowberg et al. (2007). They consist in

betting markets where betters can exchange contracts whose payoffs depend on the outcome of a contingent event. For the 2007 French presidential election, News-Futures proposed “Winner-take-all” contracts linked to the victory of S. Royal or N. Sarkozy. Under the market efficiency assumption, the literature interprets the price of a “Winner-take-all” contract as the average probability of the candidate’s victory as estimated by the market. This is the best prevision of future outcomes on the basis of past and current public information. In that case, a change in prices of such contracts reflects the arrival of unexpected and relevant news. Prediction markets have often formulated accurate predictions about political outcomes. Using Iowa Electronic Market data about American presidential elections of 1988, 1992, 1996, and 2000, Berg et al. (2003) show that these data are more accurate than opinion polls. Rhode and Strumpf (2004) point out that a large political prediction market correctly anticipated the outcomes of the American presidential elections from 1868 to 1940 while no scientific opinion poll was available. Studying betting on district-level political elections in Australia, Wolfers and Leigh (2002) find that market predictions are accurate in spite of the fact that no scientific opinion poll is available for this type of elections. Wolfers and Zitzewitz (2004) reach similar conclusions. See also Snowberg et al. (2011) who highlight how prediction market data help in event studies. By separating a single event window into many small sub-windows, prediction markets data make estimates of relations more precise than traditional event studies.

Using a panel data set made of the 119 largest firms listed on the French stock market, we analyze the correlation between the time series of variations of the probability of a candidate’s victory and abnormal stock market returns of these firms from January 1<sup>st</sup> 2007 to the election day. Abnormal returns of a firm are defined as the part of its returns that cannot be simply explained by the average stock market evolution: they represent the idiosyncratic evolution of a firm value. Under the assumption that stock market’s actors use all the available information in the best possible way, abnormal returns of firms evolve before the election as its outcome is anticipated. Firms that should benefit in one way or another from the victory of a specific candidate should have abnormal returns positively correlated with changes in this candidate’s probability of victory. Contrary to Herron et al. (1999) who investigates impacts of political majority at the sector

level, or Snowberg et al. (2007) who analyze these impacts on aggregate values (stock markets index, oil price, bonds, future price of dollars etc.), we propose a semi-disaggregated analysis to point out impacts of political majorities on specific groups. This allows us to test two potential channels of transmission from politics to the firms' value: the announced reforms included in programs and the friendship network channel. Accordingly, we create three different groups of firms on the basis of available information. Two of them are made of firms that should benefit from reforms announced by N. Sarkozy and S. Royal. The last one is made of firms owned or directed by friends of N. Sarkozy whose connections with businessmen as been largely discussed by French medias. We find that N. Sarkozy 's winning probability is positively associated with abnormal returns of firms listed in his network or supposed to benefit from his political program. Both effects seem independent. The effect on firms' abnormal returns associated with membership to his network is however around fifty percents larger than the other one. Isolating from his network his close friends, we find that the effect is the strongest for firms ruled or owned by his closest friends. There is also partial evidence that firms listed in the network of N. Sarkozy have abnormal returns negatively correlated with changes in the winning probability of S. Royal and abnormal returns of firms that should benefit from S. Royal's program are not correlated with changes in her winning probability. All these results take into account that changes in the candidates' probability of victory may also impact firms differently depending on their characteristics such as the industry in which they are active, their size or whether they are partially owned by the state or not.

The remainder of the paper is organized as follows. Section 2 presents the Newsfutures data and the way the different groups are constructed. Section 3 describes and discusses the identification strategy based on the efficiency market hypothesis. Empirical results are presented in section 4. Finally, section 5 provides concluding remarks.

## 2 Data

This section presents the data used in this paper: the firms value data set and the political expectations data set.

## Stock market returns and groups of firms

The SBF 120 is a reference index composed by the 120 most actively traded stocks on the Paris stock Exchange. In this paper, we use daily stock values of firms composing the SBF 120 from mid-2006 to mid-2007. Data are from Euronext.<sup>1</sup> The daily return of each firm is simply the change in percentage between the opening price and the closing price. We extract information about ownership of each firm by the state from Ernst & Young (2007).

Before the election, experts from “La Société Générale”, a French leading bank, had analyzed the electoral programs of N. Sarkozy and S. Royal and defined two portfolios composed of 27 selected firms that could benefit from reforms announced by each candidate. In this paper, we take these two groups as given by La Société Générale (2007). The detailed composition of both groups is presented in appendix.

Medias have reported strong connections between N. Sarkozy and some businessmen. The term “*valeurs Sarkozy*” has been used sometimes in media to name firms like Dassault, Lagardère, and Bouygues for example. We build a list of businessmen connected to N. Sarkozy using information provided by various sources such as Chemin and Perrignon (2007) and Dély and Hassoux (2008). We associate firms of the SBF 120 to people who direct the firm or own it. To assess ownership, we check whether an individual holds over 5% of shares or of voting rights. We take into account indirect participation. The precise description of firms we listed in the network of N. Sarkozy is presented in appendix.

The full list of firms included in the different groups can be found in table 8 in appendix. The number of firms within each group is given by figure 1. Table 1 presents descriptive statistics for average returns of firms belonging to the different groups from January 1<sup>st</sup> 2007 to the first round of the presidential election.

## Prediction market data

The French presidential election follows a two-round process to elect by direct vote a president for a five-year term. This election orientates the political majority at the French parliament. For the 2007 presidential election, the first round of

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<sup>1</sup>Only 119 firms are used in this paper. We exclude Eurotunnel from the analysis because its quotation was stopped during part of the period.

voting took place on April 22<sup>nd</sup>. The main political candidates were known by the beginning of January 2007: F. Bayrou, S. Royal, and N. Sarkozy.<sup>2</sup> Since no candidate obtained a majority of fifty percents plus one vote, a second round between the two leading candidates took place on May 6<sup>th</sup>. N. Sarkozy, leader of the main right-wing party was opposed to S. Royal, candidate of the main left-wing party. N. Sarkozy was elected.

We use data from a predictive market website – NewsFutures – to measure daily changes in each candidate’s probability of victory between January 1<sup>st</sup> 2007 and the first round of the election. NewsFutures was the prediction market with the strongest activity for this election. On this website, players sell and buy “Winner-take-all” contracts over a candidate’s name (S. Royal or N. Sarkozy) that offer a 100 units payoff if this candidate finally wins the election. The exchange price of these contracts between player depends on instantaneous matching of demand and supply. After receiving a free initial endowment, betters can set limit orders.  $N$  contracts are issued (destroyed) when a better wants to buy (to sell)  $N$  contracts and another better wants to buy (to sell)  $N$  opposite contracts. The historic of prices, bid and ask orders, the number of contracts in circulation are common knowledge among betters. Until the outcome is decided, the trading price reflects to a certain extent the collective consensus among betters about the expected value of the contract, i.e. the average probability of each candidate’s victory as estimated by the market. For an interesting discussion over the interpretation of prediction prices as probabilities, see Manski (2004) and Wolfers and Zitzewitz (2006).

A transaction is registered at a given price as soon as two opposite orders match. It was active 7 days a week and 24 hours a day, from the end of 2005 to May 6<sup>th</sup> 2007. We gathered the whole historic record of transactions of “Winner-take-all” contracts associated with S. Royal and N. Sarkozy. We reconstruct opening and closing prices to match the daily pattern of the French stock market.<sup>3</sup> We then

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<sup>2</sup>S. Royal was declared as the official candidate of her party after the primaries of the “*Parti Socialiste*”, on November 16<sup>th</sup> 2006. F. Bayrou presented his will to run the election for the “*Mo-dem*” on December 2<sup>nd</sup> 2006. Finally, although the primaries of the “*Union pour un Mouvement Populaire*” occurred only in January 2007, it was already clear that N. Sarkozy would be the candidate of this party.

<sup>3</sup>For each contract, we define the opening price as the price of the closest transaction to 9 a.m., and the closing price as the price of the closest transaction to 5 : 30 p.m. French legal time.

define the daily change in percentage of each candidate’s probability to be elected as the ratio of the difference between closing and opening prices to the opening price.

Note that NewsFutures uses virtual currency as requested by French law. This may raise an issue concerning the quality of the prediction made by players on the election’s outcome. There are however some points that allow to alleviate some of these doubts. For instance, the best betters are ranked on the website. The ranking of top betters and the virtual wealth can be considered as a symbolical payoff, and seem to be a sharp incentive to predict well, if we trust the enthusiasm of betters on the website forum. In addition, gains in virtual money allow the better to participate to auctions to win “real” goods, so payoffs are indirectly real. See Servan-Schreiber et al. (2004) for additional comments on this issue.

Activity on NewsFutures has increased until the 2007 French presidential election. As shown by figure 2, the number of transactions per day sharply increased from December 2006. All days without any exchange occur before December 2006. Even if days without any exchange or a weak activity do not necessarily mean that the prediction market is inefficient (if no relevant information is revealed, no change in prices should occur), information conveyed by such low flows of transactions may be scarce. Note that activity sharply increases when the main candidate became confirmed and publicly known. In this paper, we use only data from January 1<sup>st</sup> 2007 on.

Figure 3 plot the victory probabilities of N. Sarkozy and S. Royal as the price of associated “Winner-take-all” contracts from December 2006 on. Assuming that only three candidates could have won the elections from the point of view of investors and betters and that the market is balanced, we compute the probability of victory of F. Bayrou as  $\text{Max}\{0, 100 - P_{\text{Royal}} - P_{\text{Sarkozy}}\}$ , where  $P_{\text{Candidate}}$  is the price of “Winner-take-all” contract on *Candidate*. NewsFutures has correctly predicted the two winners of the first round (N. Sarkozy and S. Royal) and the final winner of the election. We globally observe three periods. Up to February, contracts associated with S. Royal and N. Sarokzy are exchanged at the same price of 50 virtual currency units. From February on, the probability of victory of N. Sarkozy steady increases. This went alongside with a regular decrease of the one of S. Royal. In March, F. Bayrou appeared as an credible alternative during a



short period of time.

### 3 Estimation strategy

This section briefly describes the estimation strategy to uncover and estimate the market value of political orientations and friendship connections of the different candidates who ran for the 2007 French presidential election. To achieve this, we look at the correlation between winning probability changes of one candidate and abnormal returns of firms listed on the French stock market.

We first construct abnormal returns of each firm by estimating the relation of its return to the market return before the events period and predicting them over the period of interest (see MacKinlay (1997)). Concretely, we run the following regression for each firm  $i$  using daily returns between September 1<sup>st</sup> and December 31<sup>st</sup> 2006:

$$\mathbb{R}_t = \alpha + \beta \times \bar{\mathbb{R}}_t + \varepsilon_t, \quad (1)$$

where  $\mathbb{R}_t$  is firm  $i$  stock return on day  $t$ ,  $\bar{\mathbb{R}}_t$  is the market return on day  $t$ , and  $\varepsilon_t$  is the error term.<sup>4</sup> We estimate this expression separately for each firm, what gives us distinct pairs of parameters  $\hat{\alpha}$  and  $\hat{\beta}$  for each firm. These estimated parameters are used to compute abnormal returns of each firm from January 1<sup>st</sup> 2007 to the election date using the following formula:

$$\tilde{\mathbb{R}}_t = \mathbb{R}_t - \left\{ \hat{\alpha} + \hat{\beta} \times \bar{\mathbb{R}}_t \right\}, \quad (2)$$

where  $\tilde{\mathbb{R}}_t$  is abnormal return of firm  $i$  and the other notations are as defined above.

The method we use to identify correlations between changes of candidates' winning probabilities and abnormal returns of firms consists mainly in the estimation of interaction terms. The expression we estimate includes daily firm level observations from January 1<sup>st</sup> to April 22<sup>nd</sup> 2007. It can be written as follows:

$$\tilde{\mathbb{R}}_{it} = \alpha + \beta \times \Delta \text{Candidate}_{jt} + \gamma \times \mathbb{1} \{ \text{Group}_c \}_i \times \Delta \text{Candidate}_{jt} + \mathbb{I}_i + \varepsilon_{it}, \quad (3)$$

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<sup>4</sup>In this paper, we use average daily return of stocks that are part of the SBF 120 as market return. Results using the SBF 120 index, i.e. taking into account relative sizes of firms, to compute the market return are fairly identical.

where  $\Delta\text{Candidate}_{jt}$  is the change in percentage of candidate  $j$  winning probability on day  $t$ ,  $\mathbb{1}\{\text{Group}_c\}_i$  is equal to 1 if firm  $i$  belongs to group  $c$ ,  $\mathbb{I}_i$  is a firm fixed effect, and  $\varepsilon_{it}$  is the error term. This flexible expression allows us to include additional interaction terms with different terms and different candidates. We estimate this expression using ordinary least squares and correct standard errors to take heteroscedasticity into account. Parameter  $\beta$  captures the average effect of changes in winning probability of candidate  $j$  on all firms abnormal returns. Parameter  $\gamma$  captures the effect of changes in winning probability of candidate  $j$  on firms that belong to group  $c$ .

Considering abnormal returns allows to directly look at the over or under-performance of a group of firms according to a political scenario and to point out redistribution effects among firms (as used by Knight (2007) for example). In addition, it reduces the simultaneity bias that would arise if the stock market affected individuals votes or if a third variable impacted both elements.

To be valid, our method requires that the prediction market incorporates unexpected relevant information in a similar way that the stock market does. Investors and betters must have access to the same set of information, use the same implicit model to infer the probability of victory of a candidate from political news, and react at the same speed. Fama (1970) categorizes the efficiency of a market into three levels: strong form, semi-strong form and weak form of efficiency depending on the set of information already embedded in current prices (respectively: all the public and private information, all the public information, the whole historic of prices). Performing runs tests of independence of “Winner-take-all” prices variations and logarithmic random walk tests for prices, we do not find empirical evidence to reject the assumption that we face a weakly efficient market.<sup>5</sup>

Testing if prices incorporates instantly all the public relevant information available, requires first to be able to define this arrival of new pieces of information and then to infer from them winning probabilities i.e to be able to define how good prices must be. Semi-strong form efficiency tests are always joint-hypothesis tests: a first hypothesis concerning what good prices must be, the second one concerning the similarity between good prices and observed prices. Defining the relevant set of information and its dynamics, and inferring probabilities from it appear highly

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<sup>5</sup>See section B in appendix for a presentation of these tests.

impossible to do in our case; so testing semi-strong form of efficiency seems out of reach. We make the assumption that the market is efficient in the semi-strong form. As indicated above, prices well reflect the general dynamics of the campaign, the winners of both rounds, the rise and fall of F. Bayrou, and other events that support our assumption.

Private information concerning the electoral outcome is scarce enough not to be analyzed at all.

## 4 Results

In this section, we present the main results on the effect of changes in candidates winning probabilities on the abnormal returns of firms. The period used from this analysis runs from January 1<sup>st</sup> to April 22<sup>nd</sup> 2007. The second date is the first round of the 2007 French presidential election.<sup>6</sup> All estimated effects must be interpreted as impacts perceived by the stock market (that may wrongly consider that a candidate is favorable to some firms) under the assumption that variations of “Winner-take-all” prices reflect changes in the probability of a candidate’s victory.

We start by investigating the average effect of changes in the three candidates winning probabilities on listed firms irrespective of their characteristics. Table 2 presents estimates of equation (3) without any interaction terms. In columns 1 to 3, we regress daily abnormal returns of firms on changes in winning probabilities of the three candidates separately. In columns 4 to 6, we run the same exercise using all combinations of changes in winning probabilities.<sup>7</sup> According to results presented in this table, there is no evidence of any aggregate effect of changes in winning probabilities on firms abnormal returns.

Interaction terms are included in regressions presented in table 3. In the upper part of the table, we investigate the effect of change in winning probabilities of the three different candidates on firms belonging to N. Sarkozy’s network. The estimated expression is thus equation (3) where group  $c$  is the network of N.

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<sup>6</sup>Results are qualitatively and quantitatively similar if we extend the period up to the second round of the 2007 French presidential election.

<sup>7</sup>As changes in F. Bayrou’s winning probability have been indirectly constructed using information from winning probabilities of N. Sarkozy and S. Royal, we do not include the three changes of winning probabilities simultaneously.

Sarkozy. In the middle part of table 3, the group of interest is constituted of firms that should benefit of reforms announced by N. Sarkozy. In the bottom part of the table, the group of interest contains firms that should benefit of reforms planned by S. Royal. The first three columns of each part separately test the effect of change in winning probability of a single candidate. The last three columns test how effects change when an alternative candidate is taken into account.

Results presented in the upper and middle parts of table 3 show that changes of N. Sarkozy winning probability are positively associated with abnormal returns of firms listed in this candidate's network or supposed to benefit from his planned reforms. Figures 4 and 5 illustrate these facts. In each figure, we plot average daily abnormal returns of firms belonging to one of the groups and the daily changes in N. Sarkozy's probability of victory. In both cases, series are positively correlated. Table 3 provides also partial evidence that firms listed in the network of N. Sarkozy have abnormal returns negatively correlated with changes in the winning probability of S. Royal as shown by estimated coefficients presented in columns 4 and 6. Results presented in the bottom part of the table suggest that abnormal returns of firms that should benefit from the platform of S. Royal are not correlated with changes in winning probability of any candidate. Taking account of the changes in the winning probabilities of the other candidates, we find that this effect is stronger when changes in N.Sarkozy's chances of winning go along with opposite changes of the same magnitude in S. Royal's chances, suggesting that this political alternative is real for investors.

All in all, table 3 suggests that market operators interpret the possible victory of N. Sarkozy in the presidential election as beneficial for firms listed in his network or which should benefit from his political program. These results may however be due to specific characteristics of firms listed in these two groups. For example, N. Sarkozy is maybe more connected with influential individuals belonging to particularly large firms or to firms operating in specific activities. We tackle these issues in tables 4 and 5 where we add new interaction terms to equation (3). In table 4, the group of interest is made of firms belonging to the candidate's network. In table 5 the group of interest contains firms that should benefit from the platform of N. Sarkozy. In column 1 of tables 4 and 5, we introduce interaction terms of changes in the winning probability of N. Sarkozy and dummy variables equal to 1

if a firm belongs to a particular industry. In column 2 of both tables, we control for interactions with dummy variables capturing the extent of ownership by the state. In column 3, we introduce an interaction term with a dummy variable equal to 1 if the firm belongs to the CAC 40 which is the index of the 40 largest firms listed on the French stock market. Finally, the last column of both tables presents estimates from a regression where all the above described interactions are entered simultaneously. Interestingly, none of the added interaction terms is found to be statistically significant in tables 4 and 5. Furthermore, the estimated coefficient of interaction terms of interest is remarkably stable accross specification. Whatever the group of interest, it is virtually identical to the corresponding estimate presented in table 3: around 0.035 for the network and around 0.025 when the group is defined as firms that should benefit from reforms announced by N. Sarkozy.

A natural question is whether effects found for firms belonging to the two groups are redundant or not. As shown by figure 1, the two groups are clearly distinct but have still some firms in common. In table 6, we present estimates of a horse race between effects associated with membership to the two groups. The estimated coefficients correspond to equation (3) when two different interaction terms are entered simultaneously. In even-numbered columns, we include the set of interaction terms capturing firms characteristics as in 4 and 5. In columns 3 and 4, we also include an interaction term for firms belonging to both groups. As shown by estimates presented in table 6, the effect of changes in winning probability of N. Sarkozy on firms belonging to his network has still the same order of magnitude. The same remark may be done about the interaction term for firms that should benefit from the reforms of this candidate, although the coefficient loses some statistical significance. Interestingly, we do not find any evidence of a supplementary effect for the few firms belonging to both groups. All in all, both effects seems to be fairly independent. The effect associated with membership to the network of this candidate is however around fifty percents larger than the other one: changes in winning probability of N. Sarkozy have a stronger influence on abnormal returns of firms listed in his network.

The last exercise we conduct in this paper consists in a decomposition of the network of N. Sarkozy into “close friends” and firms that belong only to his network. The list of firms included in the first group can be found in table 8 in appendix.

Reasons to classify firms in this group are also presented in appendix. According to estimates presented in the first column of table 7, there is no statistically significant effect of changes in winning probability of the candidate on abnormal returns of firms belonging only to his network. On the contrary, the effect is stronger than all previous estimates for firms listed in the group made of “close friends”. In column 2, we add the large set of additional interactions with firms characteristics already used above. Estimated coefficients are not altered by the addition of these co-variates. These results suggest that distance to the candidate does matter in the evaluation made by market actors of consequences from the expected victory of N. Sarkozy on firms returns.

## 5 Concluding remarks

How large is the sum of money represented by excess returns induced by the raise of N. Sarkozy during the 2007 campaign? A back of the envelope calculation allow us to estimate that firms belonging to the network of N. Sarkozy experienced together a 11,953 millions euros excess capitalization due to his election. The back of the envelope calculation is following. By the end of December 2006 total stock market capitalization of firms listed in the network of N. Sarkozy amounts 341,530 millions euros. From January 1<sup>st</sup> 2007 to the election, the probability of victory of this candidate went from 0.5 to 1, which represents total increase of 100 percents. Taking the effect of changes in this candidate’s probability of victory on abnormal returns of firms belonging to his network equal to 0.035 (which corresponds approximately to the average effect estimated across the different specifications), we obtain a total increase of  $0.035 \times 341,530 = 11,953$  millions for the value of firms.<sup>8</sup> Under the same reasoning, the 0.035 effect can also be compared to the return of an asset which value would increase by 3.5% over a four months period on top of the average market evolution.

We have analyzed returns of firms listed on the French stock market induced

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<sup>8</sup>Applying the same method, we would obtain a 7,236 millions euros excess capitalization for firms that should benefit from the platform announced by N. Sarkozy. Although not statistically significant, results obtained using the platform of S. Royal suggest that 3,614 millions euros is a upper bound for the value of her program.

by anticipated changes in the political majority during the 2007 French presidential election. We have targeted three groups of firms that should benefit from a candidate's victory. Two of them are made of firms that should benefit from reforms announced by N. Sarkozy and S. Royal. The last one is made of firms owned or directed by friends of N. Sarkozy whose connections with businessmen as been largely discussed by French medias. We have examined the correlation of abnormal stocks returns of firms belonging to these groups with changes in each candidate's probability of victory as revealed by a political prediction market.

Firms that should benefit of S. Royal's platform do not exhibit high abnormal returns. On the opposite, firms that should benefit from reforms announced by N. Sarkozy or whose top executives or main shareholders are friends of him exhibit significantly positive abnormal returns. The effect on firms' abnormal returns associated with membership to his network is however around fifty percents larger than the other one. Isolating from his network his close friends, we find that the effect is the strongest for firms ruled or owned by his closest friends. There is also partial evidence that firms listed in the network of N. Sarkozy have abnormal returns negatively correlated with changes in the winning probability of S. Royal and abnormal returns of firms that should benefit from S. Royal's program are not correlated with changes in her winning probability. All these results take into account that changes in the candidates' probability of victory may also impact firms differently depending on their characteristics such as the industry in which they are active, their size or whether they are partially owned by the state or not.

## References

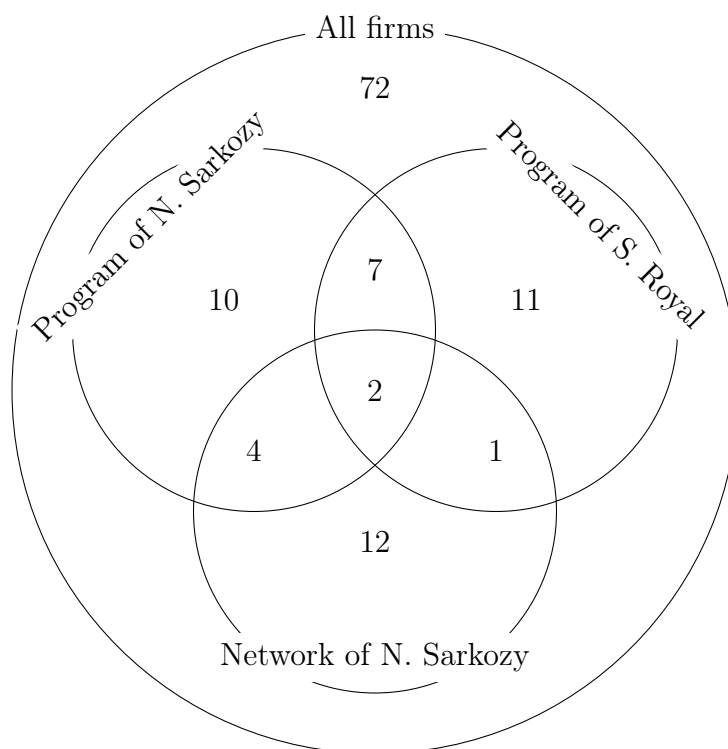
- Alesina, Alberto, and Howard Rosenthal. *Partisan Politics, Divided Government, and the Economy*. Cambridge University Press, 1995.
- Alesina, Alberto, Nouriel Roubini, and Gerald D. Cohen. *Political Cycles and the Macroeconomy*. The MIT Press, 1997.
- Berg, Joyce, Forrest Nelson, and Thomas Rietz. “Accuracy and Forecast Standard Error of Prediction Markets.” Technical report, Working paper, University of Iowa., 2003.
- Chemin, Ariane, and Judith Perrignon. *La Nuit du Fouquet’s*. Fayard, Paris, 2007.
- Claessens, Stijn, Erik Feijen, and Luc Laeven. “Political connections and preferential access to finance: The role of campaign contributions.” *Journal of Financial Economics* 88, 3: (2008) 554–580.
- Cohen, Lauren, Andrea Frazzini, and Christopher Malloy. “The Small World of Investing: Board Connections and Mutual Fund Returns.” Working Paper 13121, National Bureau of Economic Research, 2007.
- Dély, Renaud, and Didier Hassoux. *Sarkozy et l’argent roi*. Calmann-Levy, Paris, 2008.
- Do, Quoc-Anh, Bang Dang Nguyen, Yen-Teik Lee, and Kieu-Trang Nguyen. “Out of Sight, Out of Mind: The Value of Political Connections in Social Networks.” Working Papers 19-2011, Singapore Management University, School of Economics, 2011.
- Ernst & Young. “Étude sur l’actionnariat et le contrôle des principales entreprises française cotées.” Rapport pour le Sénat - Commission des Finances, 2007.
- Faccio, Mara. “Politically Connected Firms.” *American Economic Review* 96, 1: (2006) 369–386.
- Fama, Eugene F. “Efficient Capital Markets: A Review of Theory and Empirical Work.” *Journal of Finance* 25, 2: (1970) 383–417.



- Fan, Joseph P.H., T.J. Wong, and Tianyu Zhang. “Politically connected CEOs, corporate governance, and Post-IPO performance of China’s newly partially privatized firms.” *Journal of Financial Economics* 84, 2: (2007) 330–357.
- Fisman, Raymond. “Estimating the Value of Political Connections.” *American Economic Review* 91, 4: (2001) 1095–1102.
- Goldman, Eitan, Jörg Rocholl, and Jongil So. “Do Politically Connected Boards Affect Firm Value?” *Review of Financial Studies* 22, 6: (2009) 2331–2360.
- Herron, Michael C., James Lavin, Donald Cram, and Jay Silver. “Measurement of Political Effects in the United States Economy: A Study of the 1992 Presidential Election.” *Economics and Politics* 11, 1: (1999) 51–81.
- Khwaja, Asim Ijaz, and Atif Mian. “Do Lenders Favor Politically Connected Firms? Rent Provision in an Emerging Financial Market.” *The Quarterly Journal of Economics* 120, 4: (2005) 1371–1411.
- Knight, Brian. “Are policy platforms capitalized into equity prices? Evidence from the Bush/Gore 2000 Presidential Election.” *Journal of Public Economics* 91, 1-2: (2007) 389–409.
- La Société Générale. “Élections 2007: Les valeurs à privilégier.” *Performance Magazine* - Numéro 7, 2007.
- Li, Hongbin, Lingsheng Meng, Qian Wang, and Li-An Zhou. “Political connections, financing and firm performance: Evidence from Chinese private firms.” *Journal of Development Economics* 87, 2: (2008) 283–299.
- MacKinlay, A. Craig. “Event Studies in Economics and Finance.” *Journal of Economic Literature* 35, 1: (1997) 13–39.
- Manski, Charles F. “Interpreting the Predictions of Prediction Markets.” NBER Working Papers 10359, National Bureau of Economic Research, Inc, 2004.
- Rhode, Paul W., and Koleman S. Strumpf. “Historical Presidential Betting Markets.” *Journal of Economic Perspectives* 18, 2: (2004) 127–142.

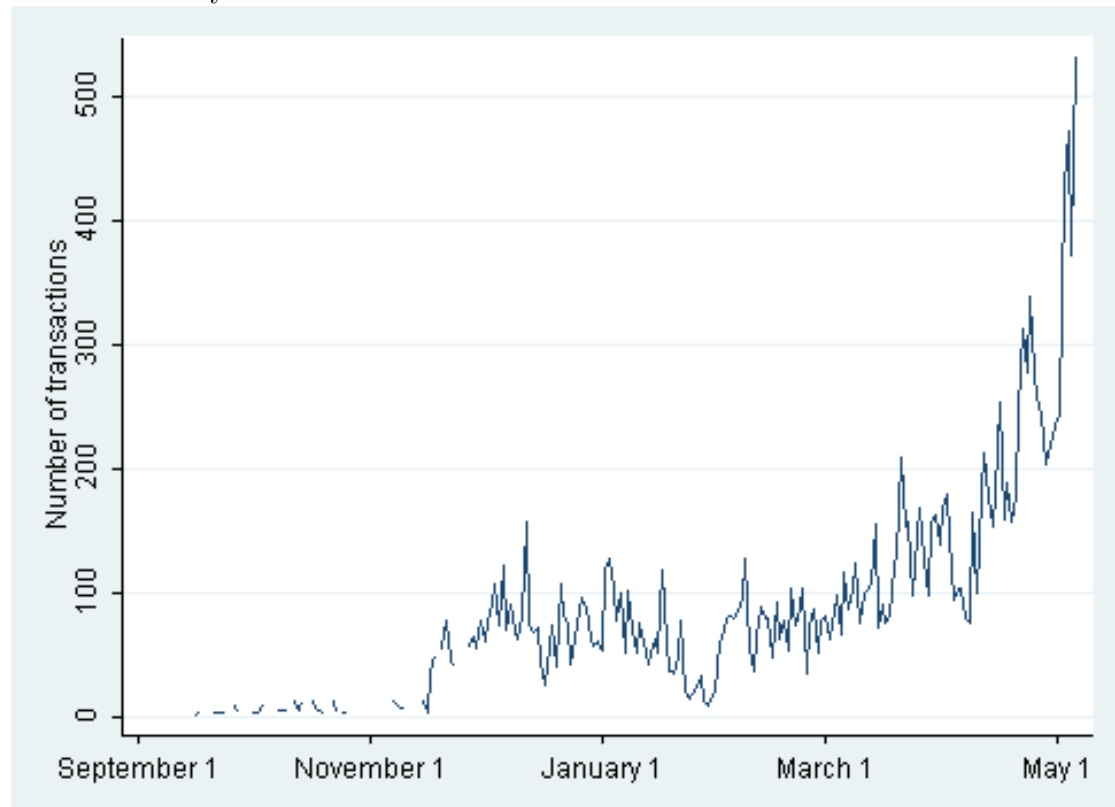
- Servan-Schreiber, Emile, Justin Wolfers, David M. Pennock, and Brian Galebach. "Prediction Markets: Does Money Matter?" *Electronic Markets* 14, 3: (2004) 243–251.
- Snowberg, Erik, Justin Wolfers, and Eric Zitzewitz. "Partisan Impacts on the Economy: Evidence From Prediction Markets and Close Elections." *The Quarterly Journal of Economics* 122, 2: (2007) 807–829.
- . "How Prediction Markets Can Save Event Studies." Working Paper 16949, National Bureau of Economic Research, 2011.
- Wolfers, Justin, and Andrew Leigh. "Three Tools for Forecasting Federal Elections: Lessons from 2001." *Australian Journal of Political Science* 37, 2: (2002) 223–40.
- Wolfers, Justin, and Eric Zitzewitz. "Prediction Markets." *Journal of Economic Perspectives* 18, 2: (2004) 107–126.
- . "Interpreting Prediction Market Prices as Probabilities." NBER Working Papers 12200, National Bureau of Economic Research, Inc, 2006.

Figure 1: Repartitions of firms between the different groups.



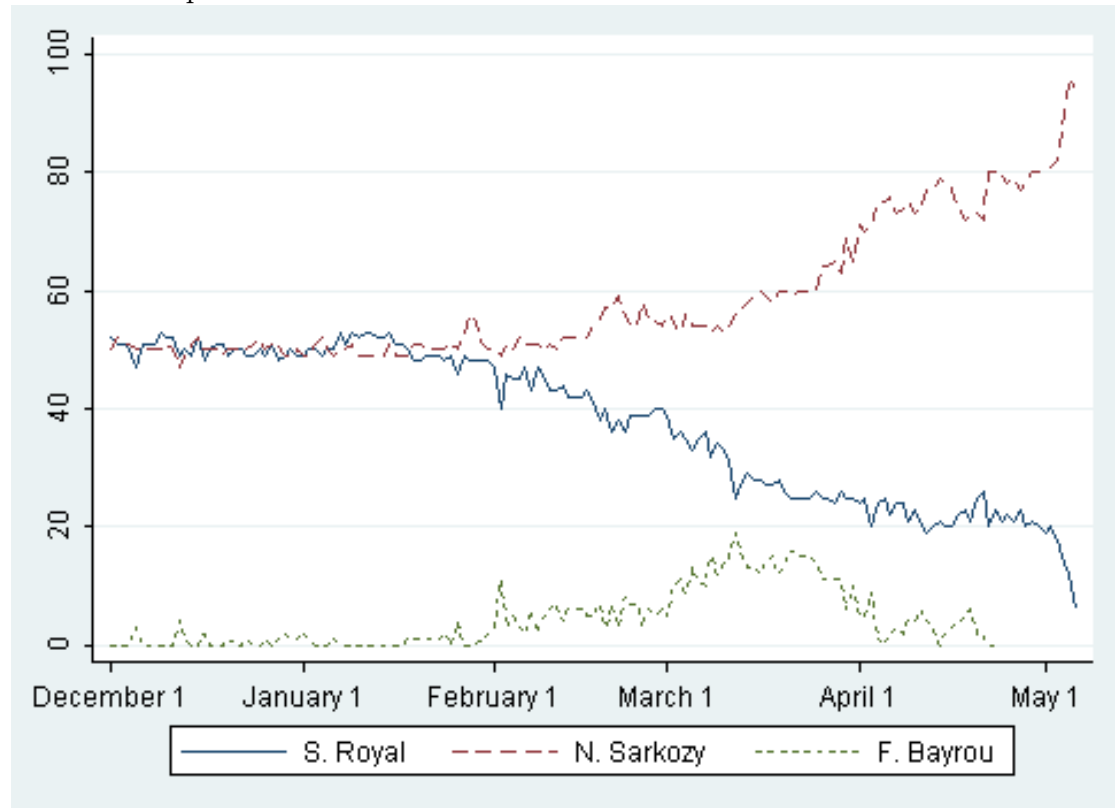
See the text to get information about the composition of each group and table 8 for the list of firms within each of them.

Figure 2: Number of daily transactions on the predictive market from September 1<sup>st</sup> 2006 to May 6<sup>th</sup> 2007.



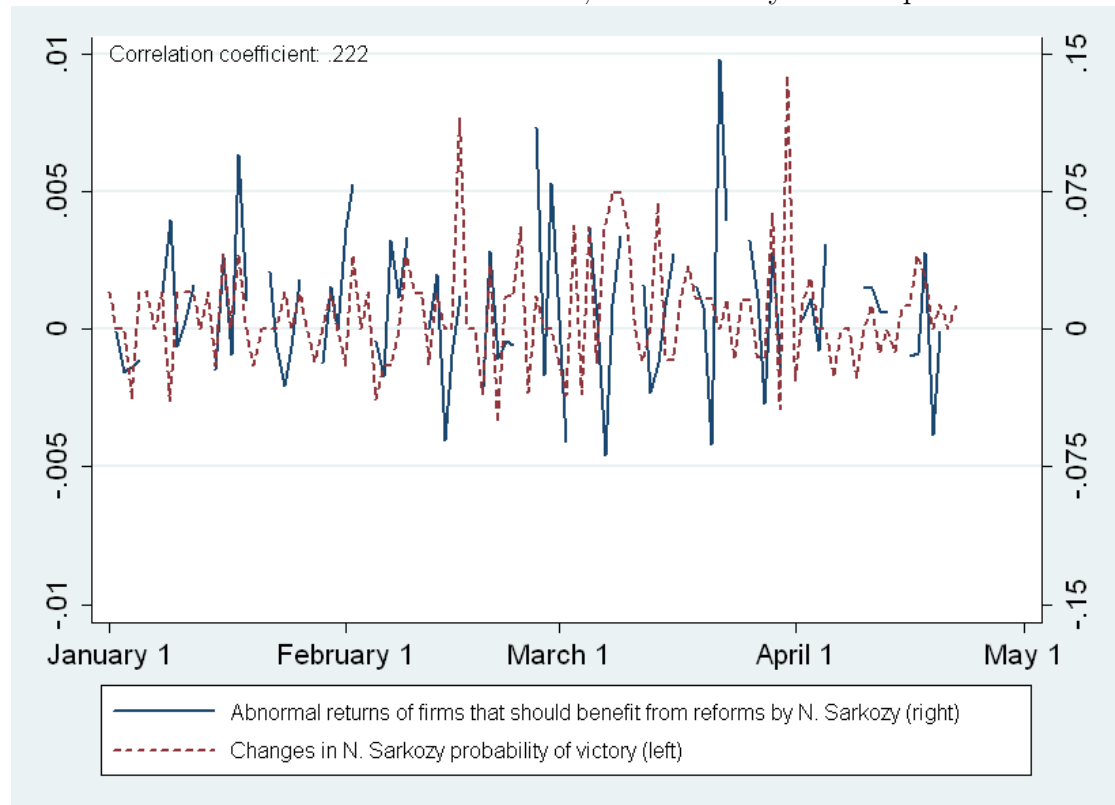
Data are from NewsFutures. The line represents the number of daily transactions on “Winner-take-all” contracts on the victory of N. Sarkozy or S. Royal at the 2007 French presidential election.

Figure 3: Winning probabilities of S. Royal, N. Sarkozy, and F. Bayrou at the 2007 French presidential election.



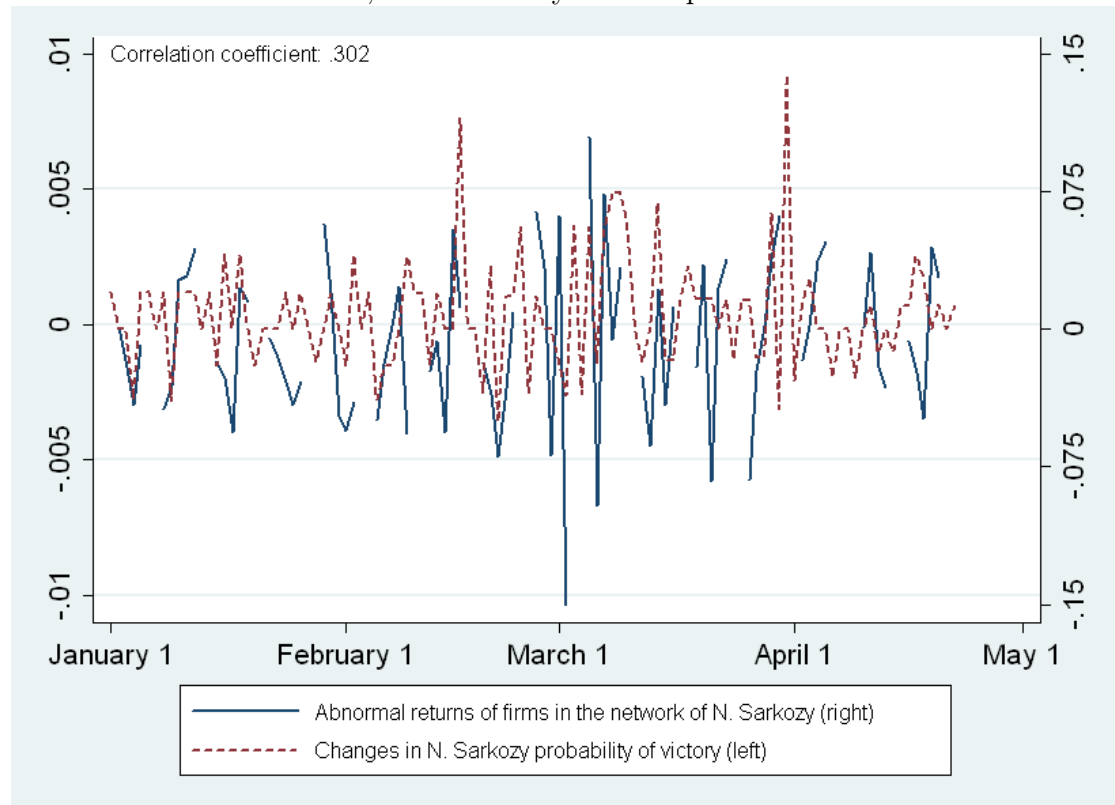
Data are from NewsFutures. Each line represents the winning probability of a different candidate. Lines of S. Royal and N. Sarkozy correspond to the price of corresponding “Winner-take-all” contract at 9 a.m. French legal time. The line of F. Bayrou is constructed as the  $\text{Max}\{0, 100 - P_{\text{Royal}} - P_{\text{Sarkozy}}\}$ , where  $P_{\text{Candidate}}$  is the price of “Winner-take-all” contract on *Candidate*.

Figure 4: Changes in N. Sarkozy probability of victory and abnormal returns of firms that should benefit from his reforms, from January 1<sup>st</sup> to April 22<sup>nd</sup> 2007.



Changes in N. Sarkozy probability of victory are computed using data from NewsFutures. They represent daily changes (in percentage) of the price of N. Sarkozy “Winner-take-all” contract. See the text for the definition of the group of firms that should benefit from N. Sarkozy reforms and for the calculation of abnormal returns. The line corresponds to the mean by day of firms’ abnormal returns.

Figure 5: Changes in N. Sarkozy probability of victory and abnormal returns of firms listed in his network, from January 1<sup>st</sup> to April 22<sup>nd</sup> 2007.



Changes in N. Sarkozy probability of victory are computed using data from NewsFutures. They represent daily changes (in percentage) of the price of N. Sarkozy “Winner-take-all” contract. See the text for the definition of the group of firms listed in the network of N. Sarkozy and for the calculation of abnormal returns. The line corresponds to the mean by day of firms’ abnormal returns.

Table 1: Returns of firms from January 1<sup>st</sup> to April 2<sup>nd</sup> 2007.

	Obs	Mean	Std.	Min	Max
Network of N. Sarkozy	19	0.065	0.118	-0.097	0.399
Program of N. Sarkozy	23	0.120	0.165	-0.276	0.487
Program of S. Royal	21	0.113	0.125	-0.276	0.244
None of the above groups	72	0.077	0.119	-0.355	0.421
All firms	119	0.089	0.128	-0.355	0.487

This table presents descriptive statistics on average returns of firms belonging to different groups from January 1<sup>st</sup> 2007 to the first round of the presidential election. Returns over the period correspond to the ratio of the difference between the opening price on January 2<sup>d</sup> and the closing price on April 20<sup>th</sup> over the opening price on January 2<sup>nd</sup>. See the text for definitions of the different groups.

Table 2: Effect of changes in winning probability of the different candidates on abnormal returns of firms.

Dependent variable: daily abnormal return.					
	(1)	(2)	(3)	(4)	(5)
$\Delta$ Sarkozy	0.000 (0.004)			0.000 (0.004)	-0.000 (0.005)
$\Delta$ Royal		0.000 (0.003)		0.000 (0.003)	0.000 (0.003)
$\Delta$ Bayrou			-0.000 (0.000)		-0.000 (0.000)
Observations	9,118	9,118	9,118	9,118	9,118
R-squared	0.036	0.036	0.036	0.036	0.036

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Robust standard errors in parentheses. All regressions include firm fixed effects and a constant term. OLS regressions. Each column presents estimates from a separate regression.  $\Delta Candidate$  is the daily change in percentage of winning probability of *Candidate*.



Table 3: Effect of changes in winning probability of the different candidates on abnormal returns of firms belonging to specific groups.

Dependent variable: daily abnormal return.					
Group: Sarkozy (network)					
	(1)	(2)	(3)	(4)	(5)
$\Delta$ Sarkozy	-0.006 (0.005)			-0.006 (0.005)	-0.008 (0.006)
$\Delta$ Royal		0.002 (0.003)		0.002 (0.003)	0.003 (0.004)
$\Delta$ Bayrou			0.000 (0.000)		-0.000 (0.000)
Group $\times$ $\Delta$ Sarkozy	0.036*** (0.011)			0.037*** (0.011)	0.047*** (0.013)
Group $\times$ $\Delta$ Royal		-0.011 (0.007)		-0.012* (0.007)	-0.017** (0.008)
Group $\times$ $\Delta$ Bayrou			-0.001 (0.001)		0.001 (0.001)
Observations	9,118	9,118	9,118	9,118	9,118
R-squared	0.037	0.036	0.036	0.037	0.037
Group: Sarkozy (program)					
	(7)	(8)	(9)	(10)	(11)
$\Delta$ Sarkozy	-0.005 (0.005)			-0.005 (0.005)	-0.005 (0.006)
$\Delta$ Royal		0.001 (0.003)		0.001 (0.003)	0.002 (0.004)
$\Delta$ Bayrou			0.000 (0.000)		-0.000 (0.000)
Group $\times$ $\Delta$ Sarkozy	0.024** (0.011)			0.025** (0.011)	0.027** (0.014)
Group $\times$ $\Delta$ Royal		-0.004 (0.008)		-0.005 (0.008)	-0.009 (0.008)
Group $\times$ $\Delta$ Bayrou			-0.001 (0.001)		0.000 (0.001)
Observations	9,118	9,118	9,118	9,118	9,118
R-squared	0.036	0.036	0.036	0.036	0.036
Group: Royal (program)					
	(13)	(14)	(15)	(16)	(17)
$\Delta$ Sarkozy	-0.000 (0.005)			-0.000 (0.005)	0.001 (0.006)
$\Delta$ Royal		-0.002 (0.003)		-0.002 (0.003)	-0.002 (0.004)
$\Delta$ Bayrou			0.000 (0.000)		0.000 (0.000)
Group $\times$ $\Delta$ Sarkozy	0.003 (0.011)			0.002 (0.011)	-0.005 (0.014)
Group $\times$ $\Delta$ Royal		0.011 (0.007)		0.011 (0.007)	0.009 (0.008)
Group $\times$ $\Delta$ Bayrou			-0.001 (0.001)		-0.001 (0.001)
Observations	9,118	9,118	9,118	9,118	9,118
R-squared	0.036	0.036	0.036	0.036	0.036

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Robust standard errors in parentheses. All regressions include firm fixed effects and a constant term. OLS regressions. Each column presents estimates from a separate regression.  $\Delta$ *Candidate* is the daily change in percentage of winning probability of *Candidate*. Variables *Group* are equal to 1 for firms that belong to the group mentioned in the first line of each part of the table. See the text for definitions of the different groups.

Table 4: Effect of changes in winning probability of N. Sarkozy on abnormal returns of firms belonging to his network, controlling for industries, state ownership and the size of firms.

Dependent variable: daily abnormal return.				
Group: Sarkozy (network)				
	(1)	(2)	(3)	(4)
$\Delta$ Sarkozy	-0.019 (0.014)	0.011 (0.020)	-0.009 (0.006)	-0.010 (0.027)
Group $\times$ $\Delta$ Sarkozy	0.034*** (0.011)	0.039*** (0.011)	0.033*** (0.012)	0.034*** (0.013)
Gas and petroleum $\times$ $\Delta$ Sarkozy	0.019 (0.024)			0.019 (0.025)
Basic materials $\times$ $\Delta$ Sarkozy	-0.013 (0.026)			-0.013 (0.026)
Industrials $\times$ $\Delta$ Sarkozy	0.015 (0.017)			0.013 (0.018)
Consumer goods $\times$ $\Delta$ Sarkozy	0.003 (0.018)			0.003 (0.018)
Health care $\times$ $\Delta$ Sarkozy	0.004 (0.024)			0.001 (0.025)
Consumer services $\times$ $\Delta$ Sarkozy	0.020 (0.017)			0.020 (0.017)
Telecommunications $\times$ $\Delta$ Sarkozy	0.019 (0.041)			-0.026 (0.048)
Utilities $\times$ $\Delta$ Sarkozy	0.030 (0.025)			0.018 (0.029)
Financials $\times$ $\Delta$ Sarkozy	0.022 (0.017)			0.022 (0.018)
No state ownership $\times$ $\Delta$ Sarkozy		-0.021 (0.021)		-0.013 (0.024)
State ownership $\in (0, 5) \times \Delta$ Sarkozy		0.005 (0.023)		0.006 (0.025)
State ownership $\in [5, 10) \times \Delta$ Sarkozy		-0.026 (0.027)		-0.020 (0.030)
State ownership $\in [10, 25) \times \Delta$ Sarkozy		-0.032 (0.029)		-0.030 (0.030)
State ownership $\in [25, 40) \times \Delta$ Sarkozy		0.013 (0.028)		0.026 (0.033)
Cac 40 $\times$ $\Delta$ Sarkozy			0.010 (0.009)	0.010 (0.011)
Observations	9,118	9,118	9,118	9,118
R-squared	0.037	0.037	0.037	0.038

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Robust standard errors in parentheses. All regressions include firm fixed effects and a constant term. OLS regressions. Each column presents estimates from a separate regression.  $\Delta$  *Candidate* is the daily change in percentage of winning probability of *Candidate*. Variables *Group* are equal to 1 for firms that belong to the group mentioned in the first line of the table. See the text for definitions of the different groups. The reference industry is "Technology". The reference category for state ownership is [40, 100]. Intervals indicate the share of capital owned by the state.

Table 5: Effect of changes in winning probability of N. Sarkozy on abnormal returns of firms that should benefit from his reforms, controlling for industries, state ownership and the size of firms.

Dependent variable: daily abnormal return.				
Group: Sarkozy (program)				
	(1)	(2)	(3)	(4)
$\Delta$ Sarkozy	-0.018 (0.014)	0.013 (0.020)	-0.009 (0.006)	-0.012 (0.027)
Group $\times$ $\Delta$ Sarkozy	0.021* (0.011)	0.028** (0.011)	0.022** (0.011)	0.024** (0.012)
Gas and petroleum $\times$ $\Delta$ Sarkozy	0.018 (0.024)			0.021 (0.025)
Basic materials $\times$ $\Delta$ Sarkozy	-0.008 (0.026)			-0.009 (0.026)
Industrials $\times$ $\Delta$ Sarkozy	0.013 (0.017)			0.011 (0.018)
Consumer goods $\times$ $\Delta$ Sarkozy	0.004 (0.018)			0.005 (0.018)
Health care $\times$ $\Delta$ Sarkozy	-0.005 (0.024)			-0.013 (0.025)
Consumer services $\times$ $\Delta$ Sarkozy	0.024 (0.017)			0.024 (0.017)
Telecommunications $\times$ $\Delta$ Sarkozy	0.018 (0.041)			-0.032 (0.048)
Utilities $\times$ $\Delta$ Sarkozy	0.038 (0.025)			0.026 (0.029)
Financials $\times$ $\Delta$ Sarkozy	0.018 (0.018)			0.018 (0.018)
No state ownership $\times$ $\Delta$ Sarkozy		-0.021 (0.021)		-0.010 (0.023)
State ownership $\in (0, 5) \times \Delta$ Sarkozy		0.002 (0.024)		0.001 (0.025)
State ownership $\in [5, 10) \times \Delta$ Sarkozy		-0.034 (0.027)		-0.024 (0.030)
State ownership $\in [10, 25) \times \Delta$ Sarkozy		-0.034 (0.029)		-0.033 (0.030)
State ownership $\in [25, 40) \times \Delta$ Sarkozy		0.011 (0.028)		0.029 (0.032)
Cac 40 $\times$ $\Delta$ Sarkozy			0.014 (0.009)	0.016 (0.010)
Observations	9,118	9,118	9,118	9,118
R-squared	0.037	0.037	0.037	0.038

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Robust standard errors in parentheses. All regressions include firm fixed effects and a constant term. OLS regressions. Each column presents estimates from a separate regression.  $\Delta$  *Candidate* is the daily change in percentage of winning probability of *Candidate*. Variables *Group* are equal to 1 for firms that belong to the group mentioned in the first line of the table. See the text for definitions of the different groups. The reference industry is "Technology". The reference category for state ownership is [40, 100]. Intervals indicate the share of capital owned by the state.

Table 6: Effect of changes in winning probability of N. Sarkozy on abnormal returns of firms that should benefit from his reforms and firms belonging to his network.

Dependent variable: daily abnormal return.				
	(1)	(2)	(3)	(4)
$\Delta\text{Sarkozy}$	-0.009* (0.005)	-0.010 (0.027)	-0.010* (0.005)	-0.013 (0.027)
$\text{Network} \times \Delta\text{Sarkozy}$	0.034*** (0.011)	0.032** (0.013)	0.037*** (0.013)	0.035** (0.014)
$\text{Program} \times \Delta\text{Sarkozy}$	0.020* (0.011)	0.021* (0.012)	0.023* (0.013)	0.024* (0.013)
$\text{Network} \times \text{Program} \times \Delta\text{Sarkozy}$			-0.011 (0.025)	-0.014 (0.025)
Industry fixed effects $\times \Delta\text{Sarkozy}$		Yes		Yes
State ownership $\times \Delta\text{Sarkozy}$		Yes		Yes
Cac 40 $\times \Delta\text{Sarkozy}$		Yes		Yes
Observations	9,118	9,118	9,118	9,118
R-squared	0.037	0.038	0.037	0.038

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Robust standard errors in parentheses. All regressions include firm fixed effects and a constant term. OLS regressions. Each column presents estimates from a separate regression.  $\Delta\text{Candidate}$  is the daily change in percentage of winning probability of *Candidate*. Variables *Group* are equal to 1 for firms that belong to the group mentioned. See the text for definitions of the different groups.

Table 7: Effect of changes in winning probability of N. Sarkozy on abnormal returns of firms belonging to his network, decomposed in different groups.

Dependent variable: daily abnormal return.		
	(1)	(2)
$\Delta\text{Sarkozy}$	-0.006 (0.005)	-0.012 (0.027)
$\text{Close friends} \times \Delta\text{Sarkozy}$	0.045*** (0.013)	0.048*** (0.015)
$\text{Only network} \times \Delta\text{Sarkozy}$	0.021 (0.018)	0.008 (0.019)
Industry fixed effects $\times \Delta\text{Sarkozy}$		Yes
State ownership $\times \Delta\text{Sarkozy}$		Yes
Cac 40 $\times \Delta\text{Sarkozy}$		Yes
Observations	9,118	9,118
R-squared	0.037	0.038

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Robust standard errors in parentheses. All regressions include firm fixed effects and a constant term. OLS regressions. Each column presents estimates from a separate regression.  $\Delta\text{Candidate}$  is the daily change in percentage of winning probability of *Candidate*. Variables *Group* are equal to 1 for firms that belong to the group mentioned. See the text for definitions of the different groups.

# Appendices

## A Groups of firms

### A.1 Firms that should benefit of reforms announced by S. Royal and N. Sarkozy

Both groups have been constructed by analysts from “La Société Générale”.<sup>9</sup>

The first regroups firms that could be favored by reforms announced by S. Royal. It is made of the following firms: Alstom, Carrefour, Derichebourg, CNP Assurance, Delachaux, Dexia, EDF Energies Nouvelles, EDF, Géophysique, Haulotte Group, Iliad, Kaufman and Broad, Lafarge, Legrand, Michelin, Nexity, Peugeot, Publicis Group, Rhodia, Saint-Gobain, Schneider, Seloger.com, Suez, Théolia, Véolia environ., and Vinci. Firms of this group that belong to SBF 120 are listed under the heading “Program of S. Royal” in table 8.

The second regroups firms that could be favored by reforms announced by N. Sarkozy and is composed as follows: Accor, Alstom, Alten, April Group, Assystem, AXA, Bouygues, Derichebourg, Crédit Agricole, Delachaux, Dexia, EDF Energies Nouvelles, Eiffage, Essilor, Icade, Kaufman and Broad, Legrand, Metropole TV, Nexity, Peugeot, Saint-Gobain, Sodexo, Teleperformance, TF1, Théolia, Véolia environ., Vinci. Firms of this group that belong to SBF 120 are listed under the heading “Program of N. Sarkozy” in table 8.

### A.2 N. Sarkozy’s network

To select firms belonging to the network of N. Sarkozy, we used information provided by Chemin and Perrignon (2007) and Dély and Hassoux (2008). We associate firms to people who direct the firm or own it. To assess ownership, we check whether an individual holds over 5% of shares or of voting rights. We take into account indirect participation.

On May 6<sup>th</sup> 2007 evening, the night that immediately followed his election, N. Sarkozy invited at the Fouquet’s, a famous high-class restaurant in Paris, a group

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<sup>9</sup>See La Société Générale (2007).

of people considered as his friends to celebrate his victory. Among them, several businessmen names appear. The following businessmen were at the Fouquet's: B. Arnault (CEO and shareholder of LVMH), N. Bazire (Company Secretary of LVMH), A. Bernheim (CEO of Generali), V. Bolloré (President and shareholder of Havas and CEO and shareholder of Bolloré Group), M. Bouygues (CEO of Bouygues, shareholder of Bouygues, TF1 and Alstom), S. Dassault (CEO and shareholder of Dassault), J.-C. Decaux (CEO and shareholder of JC Decaux), P. Desmarais (CEO of Power Corporation, shareholder of Lafargue and Imerys via Groupe Bruxelles Lambert), D. Desseigne (CEO of groupe Barrière), P. Giacometti (Director of Ipsos France), P. Kron (CEO of Alstom), H. Proglia (CEO of Véo-lia Environ.). The network of N.Sarkozy includes other people not present that night, like H. De Castries (CEO of AXA), P. Kron (CEO of Alstom), H. Proglia (CEO of Veolia Environ.), A. Frères (shareholder of Lafargue, and Imerys via Groupe Bruxelles Lambert), A. Lagardère (chairman of the board and shareholder of EADS, General and managing partner and shareholder of Lagardère), A. Lau-vergeon (CEO of Areva), M. Pébereau (CEO of BNP Paribas), G. Pélisson (CEO of Accor), F. Pinault (CEO and shareholder of PPR, shareholder of Bouygues), F. Riboud (CEO of Danone). Firms connected to these businessmen are listed under the heading "Network of N. Sarkozy" in table 8.

Some of them are very close friends of N. Sarkozy: B. Arnault was one of N. Sarkozy's witnesses at his wedding with C. Attias; V. Bolloré is a close friend to N. Sarkozy who spent on V. Bolloré's yacht some days just after being elected; M. Bouygues was also one of N. Sarkozy's witnesses at the same wedding and the father in law of the last son of N. Sarkozy; S. Dassault does not make secret of his support and friendship for N. Sarkozy and is a member of the French parliament under the banner of N. Sarkozy's party; P. Desmarais gave advice to N.Sarkozy for accessing the power when he went to Sagard in 1995; J.-C. Decaux and N. Sarkozy share the passion of cycling, and were used to practice together; A. Lagardère went to N.Sarkozy's political meetings to publicly support his "friend" (by his own words); F.Pinault is often presented as a good friend of N.Sarkozy and his ex-wife C.Attias. Firms connected to these businessmen are listed under the heading "Close friends of N. Sarkozy" in table 8.

## B Tests on NewsFutures data

### B.1 The runs test

The runs test – also known as Wald-Wolfowitz test – is a non-parametric statistical test that checks the mutual independence of a sequence of elements (null hypothesis).

A “run” of a sequence is a maximal (non-empty) segment of the sequence composed by equal elements. For instance, the sequence  $[- + + + - -]$  contains three runs:  $[-]$ ,  $[+ + + +]$ , and  $[- -]$ . Noting  $N$  the number of observations,  $N_A$  (resp.  $N_b$ ) the number of positive (negative) elements of  $X_t$ , for  $N$  large ( $> 20$ ),  $R$  the number of observed runs, given  $N_A$  ( $N_b$ ), is approximately normally distributed with

$$\mathbb{E}(R) = \frac{N + 2N_A N_b}{N} + 1, \quad (4)$$

and

$$\sigma^2(R) = \frac{2N_A N_b (2N_A N_b - N)}{N^2(N - 1)} = \frac{(\mathbb{E}(R) - 1)(\mathbb{E}(R) - 2)}{N - 1}. \quad (5)$$

If there are many runs in excess or in shortage, we may reject the hypothesis of statistical independence. A small (large) number of runs indicates positive (negative) serial correlation. Writing  $Z = \frac{R - \mathbb{E}(R)}{\sigma(R)}$ , thus we must reject the null hypothesis of statistical randomness if  $|Z| > 1.96$ . In table 9, we consider the sign of  $X_t = \Delta \text{Candidate} - \Phi$ , where  $\Phi$  is either the mean or the median of the series, and  $\Delta \text{Candidate}$  is the daily change in percentage of the price of the relevant “Winner-take-all” contract. For both series ( $\Delta \text{Sarkozy}$  and  $\Delta \text{Royal}$ ), no evidence indicates that we must reject the hypothesis of serial independence of variations of prices.

### B.2 Unit-root tests

Weak efficiency test are generally associated with random walk tests. If “Winner-take-all” contracts price time series follow a logarithmic random walk, then the returns follow a white noise process.

The logarithmic random walk of a price  $P$  can be written as:

$$\ln(P_t) = \ln(P_{t-1}) + \varepsilon_t, \quad (6)$$

where,  $\varepsilon_t$  is a white noise. Return at time  $t$  can be written as  $\frac{P_t - P_{t-1}}{P_{t-1}}$ , and approximated by  $\ln(\frac{P_t}{P_{t-1}})$ .

Results of Dickey-Fuller augmented tests presented in table 10 do not incite us to reject that  $\ln(P_t)$  has a unit root and so that prices of “Winner-take-all” contracts follow a logarithmic random walk.



Table 8: List of firms included in the sample.

	Industry	Close friends of N. Sarkozy	Network of N. Sarkozy	Program of N. Sarkozy	Program of S. Royal	Cac 40	State ownership
ACCOR	Consumer services		Yes	Yes		Yes	[5, 10]
ADP	Industrials						[40, 100]
AGF-ASS.GEN.FRANCE	Financials					Yes	
AIR FRANCE -KLM	Consumer services						[10, 25]
AIR LIQUIDE	Basic materials					Yes	
ALCATEL-LUCENT	Technology					Yes	(0, 5)
ALSTOM	Industrials	Yes	Yes	Yes	Yes	Yes	
ALTEN	Technology			Yes			
ALTRAN TECHN.	Technology						
APRIL	Financials			Yes			
APRR	Industrials						
AREVA CI	Utilities		Yes				[40, 100]
ARKEMA	Basic materials						
ASSYSTEM	Industrials			Yes			[10, 25]
ATOS	Technology						
AXA	Financials		Yes	Yes		Yes	
BACOU-DALLOZ	Consumer goods						
BENETEAU	Consumer goods						
BIC	Consumer goods						
BNP PARIBAS ACT.A	Financials		Yes			Yes	
BONDUELLE	Consumer goods						
BOURBON	Oil and gas						
BOUYGUES	Industrials	Yes	Yes	Yes		Yes	
BUSINESS OBJECTS	Technology						
CAP GEMINI	Technology					Yes	
CARREFOUR	Consumer services				Yes	Yes	
CASINO GUICHARD	Consumer services						
CIMENTS FRANCAIS	Industrials						
CLARINS	Industrials						
CLUB MEDITERRANEE	Consumer services						
CNP ASSURANCES	Financials				Yes		[40, 100]
CREDIT AGRICOLE	Financials			Yes		Yes	(0, 5)
DANONE	Consumer goods		Yes			Yes	
DASSAULT SYSTEMES	Technology	Yes	Yes				
DERICHEBOURG	Industrials			Yes	Yes		
DEXIA	Financials			Yes	Yes	Yes	[10, 25]
EADS	Industrials	Yes	Yes	Yes	Yes	Yes	[10, 25]
EDF	Utilities				Yes	Yes	[40, 100]
EIFFAGE	Industrials			Yes			[5, 10]
ESSILOR INTL.	Health care			Yes		Yes	
EULER HERMES	Financials						
EURAZEO	Financials						
EURONEXT	Financials						
EUTELSAT COMMUNIC.	Consumer services						[25, 40]
FAURECIA	Consumer goods						
FIMALAC	Financials						
FRANCE TELECOM	Telecommunications					Yes	[25, 40]
GAZ DE FRANCE	Utilities					Yes	[40, 100]
GEICINA NOM.	Financials						
GEMALTO	Industrials						
GENERALE DE SANTE	Health care						
GEOPHYSIQUE(GLE)	Oil and gas				Yes		[5, 10]
GROUPE STERIA	Technology						
GUYENNE GASCOGNE	Consumer services						
HAULOTTE GROUP	Industrials				Yes		
HAVAS	Consumer services	Yes	Yes				
HERMES INTL	Consumer goods						
ICADE	Financials			Yes			[40, 100]
ILIAD	Technology				Yes		
IMERYS	Basic materials	Yes	Yes				
INGENICO	Industrials						
IPSOS	Consumer services		Yes				
JC DECAUX SA.	Consumer services	Yes	Yes				
KLEPIERRE	Financials						
L'OREAL	Consumer goods					Yes	
LAFARGE	Industrials	Yes	Yes		Yes	Yes	
LAGARDERE S.C.A.	Consumer services	Yes	Yes			Yes	
LEGRAND	Industrials			Yes	Yes		
LVMH	Consumer goods	Yes	Yes			Yes	
MAUREL ET PROM	Oil and gas						
MERSEN	Industrials						
METROPOLE TV	Consumer services			Yes			
MICHELIN	Consumer goods				Yes	Yes	
MITTAL STEEL A	Basic materials					Yes	
NATIXIS	Financials						
NEOPOST	Technology						
NEXANS	Industrials						
NEXITY	Financials			Yes	Yes		[5, 10]
NRJ GROUP	Consumer services						
OBERTHUR CARD SYS.	Industrials						
PAGESJAUNES	Consumer services						
PERNOD RICARD	Consumer goods					Yes	(0, 5)
PEUGEOT	Consumer goods			Yes	Yes	Yes	
PIERRE VACANCES	Consumer services						
PPR	Consumer services	Yes	Yes			Yes	
PUBLICIS GROUPE SA	Consumer services				Yes		
REMY COINTREAU	Consumer goods						
RENAULT	Consumer goods					Yes	[10, 25]
RHODIA	Basic materials				Yes		
RODRIGUEZ GROUP	Consumer goods						
S.E.B.	Consumer goods						
SAFRAN	Industrials						[25, 40]
SAINT GOBAIN	Industrials			Yes	Yes	Yes	(0, 5)
SANOFI	Health care					Yes	
SCHNEIDER ELECTRIC	Industrials				Yes	Yes	(0, 5)

Continued on next page

Table 8: (continued)

	Industry	Close friends of N. Sarkozy	Network of N. Sarkozy	Program of N. Sarkozy	Program of S. Royal	Cac 40	State ownership
SCOR SE	Financials						
SES	Consumer services						[5, 10)
SOCIETE GENERALE	Financials					Yes	(0, 5)
SODEXO	Consumer services			Yes			(0, 5)
SOITEC	Technology						
SPIR COMMUNICATION	Consumer services						
STMICROELECTRONICS	Technology					Yes	
SUEZ	Utilities				Yes	Yes	(0, 5)
TECHNICOLOR	Consumer services					Yes	
TECHNIP	Oil and gas					Yes	(0, 5)
TELEPERFORMANCE	Consumer services			Yes			
TF1	Consumer services	Yes	Yes	Yes			
THALES	Industrials						[25, 40)
TOTAL	Oil and gas					Yes	
TRIGANO	Consumer goods						
UBISOFT ENTERTAIN	Consumer goods						[5, 10)
UNIBAIL-RODAMCO	Financials						
VALEO	Consumer goods						[5, 10)
VALLOUREC	Industrials					Yes	
VEOLIA ENVIRON.	Utilities		Yes	Yes	Yes	Yes	[10, 25)
VINCI	Industrials			Yes	Yes	Yes	
VIVENDI	Consumer services					Yes	(0, 5)
WENDEL	Financials						
ZODIAC AEROSPACE	Industrials						[5, 10)

This table presents the list of the 119 firms used in this paper. These firms were included in the French stock market index SBF 120 between September 1<sup>st</sup> 2006 and May 6<sup>th</sup> 2007. EUROTUNNEL is missing because its quotation was stopped during part of this period. Industries follow Euronext's classification. Blanks indicate firms which do not belong to the different groups or who are not at all owned by the state. See the text for information about the construction of the different groups.

Table 9: Tests of random order for changes in N. Sarkozy and S. Royal winning probabilities.

Variable	Threshold	Number of runs	Z-statistic	P-value of Z-statistic
$\Delta$ Sarkozy	Median	71	1.37	0.17
$\Delta$ Sarkozy	Mean	71	1.37	0.17
$\Delta$ Royal	Median	50	-1.41	0.16
$\Delta$ Royal	Mean	50	-1.41	0.16

Each line of the table the result of a distinct test of random order. Observations are daily percentage changes from January 1<sup>th</sup> to May 6<sup>th</sup> 2007. There is 126 observations per variable.

Table 10: Unit-root tests of N. Sarkozy and S. Royal winning probabilities.

Candidate	Price	Z-statistic	MacKinnon p-value of Z-statistic
Sarkozy	Opening	0.363	0.9801
Sarkozy	Closing	0.181	0.9712
Royal	Opening	1.996	0.9987
Royal	Closing	4.315	1.0000

Each line presents the result of a distinct augmented Dickey-Fuller unit-root test. Observations are the log of opening or closing daily prices from January 1<sup>th</sup> to May 6<sup>th</sup> 2007. There is 126 observations per test.